



Use of ONYX for KYC in Branchless Bank On-Boarding: *Rapid Adoption*

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THREE MONTHS OF REAL-WORLD FIELD RESULTS

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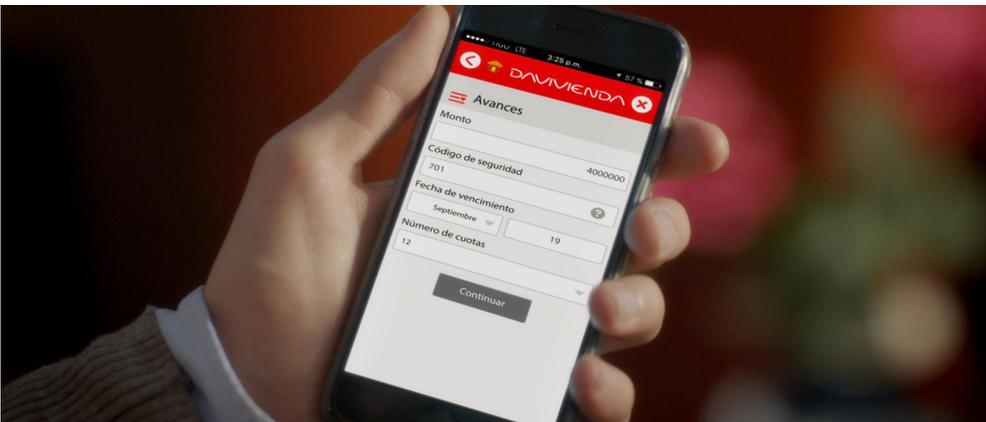


Introduction

Diamond Fortress Technologies (DFT) has prepared this white paper to demonstrate the efficacy of ONYX to provide branchless onboarding in compliance with KYC regulations and to illustrate the fast adoption rates upon deployment.

Executive Summary

The Banco Davivienda deployment represents the culmination of two years of planning between DFT, our Colombia based integration partner, Bytte SAS and Banco Davivienda. The parties have proven that customers can safely and effectively onboard themselves in compliance with KYC regulations at massive rates.



So, What is ONYX?

ONYX is patented mobile touchless fingerprint biometric software developed by Diamond Fortress Technologies. ONYX utilizes a mobile device's camera as a touchless fingerprint sensor. ONYX algorithms detect a finger in the camera field of view, automatically capture it and then process it into an FBI quality fingerprint image. ONYX is delivered as a software development kit that can be integrated into any mobile application.

The current ONYX version is being used in solutions to facilitate financial transactions and has consistently been found by multiple leading IT companies to be superior technology to our closest competitors, with regard to speed, ease of use, and image quality.

DFT has completed the next generation of ONYX, version 5.0. New features are added monthly, which will contain new machine learning technologies that allow for more precise finger detection, faster capture, better image quality, simultaneous four finger capture, enhanced liveness detection, and cloud based real-time configuration on a device-by-device basis. These improvements will result in a safer and easier user experience.

Right now, ONYX is used around 20,000 times each day. Since we developed our licensing server to track transactions three and half years ago, ONYX has been used for more than 30 million authentications.

Liveness Detection / ONYX 5.0:

ONYX needed strong liveness detection in order to be deployed in scenarios where transactions are self-directed. DFT is thrilled to announce that we've developed a spoof detection solution which is working extremely well. During testing, it performs more accurately than solutions DFT has seen in traditional touch-based sensors.

DFT has a demonstration app called "real/fake demo" that is provided to demonstrate this new technology. It includes the new robust liveness detection algorithm, among other improvements. This new version of ONYX will be suitable for all types of deployments and drive a massive boost toward global access and financial inclusion in general.



Background of Bytte / Davivienda Branchless Bank Transaction Use-Case

With the growth of the new digital economy, banks have begun to transform their services and products. And an ally of these entities to help them in the new processes is Bytte, a Colombian technology company that has been developing identity authentication tools for 15 years and is now venturing into digital solutions for two of the largest banks in the country.

The bank proceedings are usually long and complicated, especially if it is to open a bank account in your name or apply for financial credit. Bytte created a system so that today you can do it from your home or from your place of work, accessing your bank's application without having to go to an office or be assisted by a banking advisor. All that is needed is to validate your identity: confirm that you are indeed, you.

In collaboration with Apple Colombia and Banco Davivienda, Bytte initially developed a solution for the instant issuance of credit cards to customers in iShops, authorized Apple resellers as a pilot program. All consumer-facing elements, including ONYX image collection and processing, takes place on an Apple iPad. The complete credit application and card issuing process takes less than fifteen minutes.

The application performed the following functions:

1. Customer Credit Analysis
2. Biometric Authentication Against Bank Database
3. Customer Registration or Data Update
4. Credit Card Issuance
5. Payment by OTP code at POS until the physical credit card is received by the cardholder



Following the success of the iShop pilot, Davivienda and Bytte rolled out a consumer banking app that allows for remote, self-service bank account opening via ONYX. The new solution acquires the customer's fingerprint via ONYX and their nationally-enrolled fingerprint along with their government-issued national ID number. This data is automatically acquired from the ID. (See image.) The ONYX fingerprint and the fingerprint from the ID card are securely transmitted to a Davivienda-controlled server. At this point, to complete the onboarding process of the bank's customers, the ONYX fingerprint is compared to the fingerprint obtained from the image that is printed on the back of the applicant's national ID card and on file with the government of Columbia. Applying ONYX's patented technology, Davivienda then matches the real-time ONYX generated template against the applicant's nationally-registered fingerprint - all securely on Davivienda's server running on Microsoft's Azure Cloud.

The Davivienda/Bytte solution has been used by approximately 42,000 people per month during the last three months. Bytte expects to go into production with a second bank for the allocation of free investment credits and is in close contact with companies in the health sector for assisted linkage processes with the use of fully digital tools.



In the way of digital transformation, according to Microsoft, this type of platform allows people and organizations to achieve more. “The idea is that people are facilitated life and have easy and safe processes. Platforms in the Cloud allow flexibility and generate confidence. Bytte has created an innovative solution and is contributing to the digital transformation of large companies in Colombia, “ says Marco Casarín, Microsoft’s manager in Colombia.

Diamond Fortress’ success in this use case demonstrates the reliability and usefulness of ONYX in the financial services marketplace. DFT looks forward to soon announcing additional ONYX integrations via its relationship with Davivienda, Bytte, and others. Many other financial institutions, integrators and companies across the world are currently evaluating both the Bytte Biometric Platform (with embedded ONYX) and DFT’s proprietary technologies for use in positive biometric identification.

Vision for Future Development Path

It is encouraging to see that DFT’s development efforts to date are working, but there is much work to be done in order to maximize the opportunities.

Device Specific and General UX Improvements:

Our experience with Davivienda and Bytte has highlighted the need to achieve a broader range of device compatibility and improved user experience in general. Our development aim over the course of the next few months is to specifically improve the capture experience by leveraging machine learning techniques to increase the efficacy of our finger detection algorithm that triggers the auto-capture component of ONYX; thus, eliminating failure to capture due to background signal data interference. Additionally, we’ll be deploying ONYX with the ability to make real-time settings adjustments based on the specific device model and user characteristics via remote configuration server

We are also optimizing the image output so that ONYX returns a default image size regardless of device, and one that is shown to produce the highest match rate across existing national AFIS (*Automated Fingerprint Identification System*) systems. This will reduce false rejects due to scale variation. Also, this optimization will ensure ONYX does not return an image if the capture produces a fingerprint of insufficient quality thus eliminating time loss due to submission of poor quality images for matching.

We plan to implement a four finger simultaneous capture interface as well, which will allow for a high rate of match and higher accuracy.

Conclusion

In conclusion, the successful deployment of ONYX with Davivienda/Bytte proves it can power rapid, cost-effective onboarding that will revolutionize the financial industry for underserved markets.

